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[54] **POWDERED BEVERAGE CONCENTRATE OR ADDITIVE FORTIFIED WITH CALCIUM AND VITAMIN D**

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[58] Field of Search **426/72, 73, 74, 426/599, 573, 601, 654, 548**

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,252,797	2/1981	Rosenthal	424/201
4,737,375	4/1988	Nakel et al.	426/590
4,786,510	11/1988	Nakel et al.	426/76
4,992,282	2/1991	Mehansho et al.	426/72
5,260,279	11/1993	Greenberg	514/21
5,401,524	3/1995	Burkes et al.	426/590
5,438,042	8/1995	Schmidl et al.	514/21

FOREIGN PATENT DOCUMENTS

0486425	5/1992	European Pat. Off. .
1118606	7/1968	United Kingdom .
2196523	5/1988	United Kingdom .
91/19692	12/1991	WIPO .
92/19251	11/1992	WIPO .
92/21355	12/1992	WIPO .

OTHER PUBLICATIONS

Woodroof et al., *Beverages: Carbonated and Noncarbonated*, AVI Publishing, 1974, pp.143-146.

Melillo, Food Products Development, Jun. 1977, pp. 108-110.

Data From the National Health Survey, Series II, No. 231, DHHS Pub. No. (PHS) 83-1681, p. 20 (1983).

Kelly et al., *Gastroenterology*, 87:596-600 (1984).

Bei et al., *American Journal of Clinical Nutrition*, 44: 244-247 (1986).

Beuchat, *Food and Beverage Mycology*, Van Nostrand Reinhold, 1987, pp. 120-122.

Smith et al., *Calcified Tissue International*, 41:351-352 (1987).

Nationwide Food Consumption Survey, USDA NFCS, Report 86-3, (1988), pp. 62 and 75.

Spencer et al., *Journal of Nutrition*, 118:657-660, (1988).

Champagne, *Advances in Experimental Medicine and Biology*, 249: 173-184 (1989).

Mehansho et al., *Journal of the American College of Nutrition*, 8(1): 61-68 (1989).

Churella et al., *The FASEB Journal*, 4(3): A788 (1990).

Hanning et al., *American Journal of Clinical Nutrition*, 54: 903-908 (1991).

Draper et al., *Journal of Parenteral and Enteral Nutrition*, 15(2): 176-180 (1991).

Sakhee et al., *Bone and Mineral*, 20: 87-97 (1993).

Wardlaw, *Journal of the American Dietetic Association*, 93(9): 1000-1006 (1993).

(List continued on next page.)

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[57] **ABSTRACT**

A powdered beverage concentrate contains a source of calcium, vitamin D, a stabilizing gum such as gum arabic, and vegetable oil. A beverage can be made by reconstituting the beverage concentrate with water, fruit juice, or any other suitable liquid matrix.

9 Claims, 11 Drawing Sheets

